

REMARKS

This Amendment is responsive to the Office Action mailed on October 8, 2003. In that Office Action, the Examiner allowed claims 4-13 and 22-27, and rejected claims 1-3, 14-21 and 28-32. With this Amendment, claim 1 is amended. Claims 1-32 remain in the application.

The Examiner rejected claims 18-20, (21) and 28-32 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Examiner stated that claim 18 although removing the art rejection over the IBM (1/1994) reference, due to the "consisting essentially of" phrase now in line 2, that such phrase appears to exclude applicant's embodiment on page 18 of the specification which uses an ultrasonic agitator with the solvent. The Examiner requests that a showing be made that use of ultrasonics does not provide a materially significant effect in order to provide claim 18 et al. "support/enablement."

It is believed that such a showing is not necessary. The specification clearly states the ultrasonic agitator "may be used" as specifically stated on page 18 as follow:

"In the second embodiment, instead of employing a beam generator to break the bond between the fullerene molecules, a solvent, . . . may be employed to dissolve the upper layers of the multi-layer coating 200, resulting in a monolayer 210 illustrated Fig. 4. An ultrasonic agitator *may be* [emphasize added] used to agitate the solvent using an ultrasonic transducer . . . the ultrasonic agitator is particularly useful where the substrate has an irregular shape."

The above quotation from the specification, clearly states that ultrasonic agitator **may be used**, and particularly, if the substrate has an irregular shape. It is not understood how the Examiner can take the position that an ultrasonic agitator **must be used**. As § 2167.08(c) in the MPEP states:

"Limiting an applicant to the preferred materials in the absence of limiting prior art would not serve a constitutional purpose of promoting the progress in the useful arts. Therefore, an enablement rejection based on the grounds that a disclosed critical limitation is missing from a claim should be made **only** [emphasis added] when the language of the specification makes it clear that the limitation is critical for the invention to function as intended.

Broad language in a disclosure, including the abstract, omitting an allegedly critical feature, tends to rebut the argument of criticality.”

In view of the above, claim 18 and its respective dependent claims, and dependent claim 21 which depends from claim 1, comply with the enablement requirement.

Next, the Examiner rejected claims 1-3 and 14-17 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The Examiner alleged that the claims contain subject matter which was not described in the specification as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, the Examiner alleges that claim 1 as written does not require any other means besides temperature for removal of the excess fullerene layer, so the breath or scope of the claim lacks enablement, since merely using a temperature of less than 200°C will not remove fullerene-to-fullerene bonded layers.

Typically, enablement deals with the issue that the specification does not describe how to make or use the invention in sufficient detail so as to enable one skilled in the art to practice the invention as being claimed. MPEP § 2164.01. This typical situation arises when not sufficient detail is given in the specification to make or use the claimed invention. The present specification describes several ways in sufficient detail on how to remove fullerene molecules. The Examiner in this situation is alleging that a critical feature is not being claimed. This situation is specifically dealt with in MPEP § 2164.08(c).

Applicant respectfully disagrees that claim 1 omits an allegedly critical feature. Claim 1 broadly states “removing layers of fullerene molecules”. What is not specified in this step is the manner in which the molecules are removed. Applicant is entitled not to be limited to any particular method of removing the molecules, (subject of course to the prior art), since the specification describes several ways of removing the fullerene molecules. No particular way is critical since several are described.

Furthermore, as previously discussed, MPEP § 2164.08(c) states, that “broad language in a disclosure, including the abstract, omitting an allegedly critical feature, tends to rebut the

argument of criticality.” In the summary of the invention, which is located on page 3 of the application, the first full paragraph states in part:

“A multi-layer coating of fullerene molecules is deposited on the substrate, and layers of the multi-layer coating are removed leaving an approximate monolayer coating of fullerene molecules on the substrate. Preferably, the fullerene is removed while the temperature of the substrate remains below at least about 200°C.”

The following paragraphs in the summary then review ways to remove the fullerene molecules. Again, no particular manner is specified as critical and the specification includes the broad language needed to rebut the allegation of criticality. What is important to the present invention is that once a plurality of fullerene molecules are deposited on the substrate, all of the layers except the layer that is attached to the substrate be removed. It has been discovered that the fullerene molecules are more easily removed when the temperature is below about 200°C and because. A critical step in independent claim 1 is not omitted.

In view of the above, it is believed that independent claim 1 along with its respective dependent claims, 2-3 and 14-17, fully comply with 35 U.S.C. § 112, first paragraph.

The Examiner also rejected claims 1-3 and 14-17 under 35 U.S.C. § 112, first paragraph, because “the specification while being enabling for removal of fullerene-to- fullerene bonded layers when using beam generators, or solvents with ultrasonic at claimed temperatures, does not reasonably provide enablement for removal of these layers without use of taught beams or solvent/ultrasonic in the claimed temperature range. The specification does not enable any person skilled in the art to which it pertains or with which it is most merely connected, to use the invention commensurate written scope of these claims.”

Applicant’s attorney respectfully disagrees. The specification does enable any person skilled in the art to practice the invention commensurate within the scope of the claims. Removing fullerene articles using beam generators is within the scope of the claims. Removing fullerene articles with the use of solvents (ultrasonic generators are optional as discussed above) is also commensurate with the scope of the claims. The specification clearly states how to do either. See Specification at page 15-17 (beam generators) and page 18 (solvents). Therefore, the

language “removing layers of the fullerene molecules, while maintaining a temperature of the substrate at no more than about 200°(c) “is enabled by the specification. Again, it appears that what the Examiner is objecting to is non-enablement of the claims, but that the breath of the claims is too great. It is believed that the specification fully supports the breath of the claims. The claims do not exclude removal of the fullerene layers without beams or solvent since the use of a beam or solvent would infringe the claims. The claims simply do not specify the manner in which the fullerene molecules are being removed.

Next, the Examiner rejected claims 1-3, 14-15, 17 and 21 under 35 U.S.C. § 103(a) as being unpatentable over IBM Bulletin (January/1994) as previously discussed in Paper No. 8, Section 5 plus Paper No. 10, Section 6.

In Paper No. 10, Section 6, the Examiner agreed with the applicant that the IBM reference describes fullerene as being deposited as a “monolayer”. However, the Examiner then states “Figures 2, 3 and 4 very clearly show more than a monolayer thickness deposited.” However, the description portion of the IBM disclosure states:

“Firstly, a **monolayer** 1 [emphasis added] of C sub 60 or other fullerene is deposited onto a substrate 2 as schematically shown in Figure 1 and 2.”

What appears to bother the Examiner is that Figures 2, 3 and 4 of the IBM reference show what appear to be fullerene molecules above other fullerene molecules. The Examiner is interpreting this as a plurality of layers of fullerene molecules. However, how Figures 2, 3 and 4 are interpreted is irrelevant to the issue at hand. The IBM disclosure states **firstly, a monolayer . . . is deposited**. Amended independent claim 1 states that **initially a plurality of layers of fullerene molecules** are formed on the substrate.

In order for the rejection under 35 U.S.C. § 103(a) to be supported, there must be some suggestion or motivation to modify the IBM reference, some reason from common knowledge in the art, scientific principles or other legal precedent. MPEP § 2144. Since the IBM reference discloses something contrary to what is being claimed in independent claim 1 and its respective claims, that is initially forming a plurality of layers, clearly there can be no motivation to form a plurality of layers. Consequently, unless the Examiner can come up with some scientific


principle, common knowledge in the art or other legal precedent, it is not understood how the IBM reference could be so modified as to meet the requirements of claims 1-3, 14-15, 17 and 21. It is believed that the rejection under 35 U.S.C. § 103 should be withdrawn.

In view of the above, it is believed that the application is now in condition for allowance, and reconsideration and allowance of all of the claims are respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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